

REMARKS

The Office Action of May 1, 2006 has been received and reviewed.

Claims 1-63 are currently pending and under consideration in the above-referenced application. Of these, claims 1-13, 17-45, 50, 51, and 54-63 stand rejected, while claims 14-16, 46-49, 52, and 53 are drawn to allowable subject matter.

Reconsideration of the above-referenced application is respectfully requested.

Supplemental Information Disclosure Statement

Please note that a Supplemental Information Disclosure Statement was filed in the above-referenced application on December 3, 2004, but that the undersigned attorney has not yet received any indication that the references cited in the Supplemental Information Disclosure Statement have been considered in the above-referenced application. It is respectfully requested that the references cited in the Supplemental Information Disclosure Statement of December 3, 2004 be considered and made of record in the above-referenced application, and that an initialed copy of the Form PTO/SB/08 that accompanied that Supplemental Information Disclosure Statement be returned to the undersigned attorney as evidence of such consideration.

Rejections under 35 U.S.C. § 102

Claims 1, 2, 35-37, 57, and 58 have been rejected under 35 U.S.C. § 102(b) for reciting subject matter that is allegedly anticipated by the subject matter described in U.S. Patent 5,506,607 to Sanders, Jr., et al. (hereinafter "Sanders").

A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single reference which qualifies as prior art under 35 U.S.C. § 102. *Verdegaal Brothers v. Union Oil Co. of California*, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). The identical invention must be shown in as complete detail as is contained in the claim. *Richardson v. Suzuki Motor Co.*, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989).

Sanders describes, among other things, a stereolithography apparatus in which a sheet of material, such as card stock or rigid polystyrene foam lamina, is

applied with a modeling compound the surface of a thermally resistant base plate.

Col. 13, line 30, to col. 14, line 11. Both the resistant base plate and the sheet of material have flat surfaces. Col. 13, line 40-41; col. 13, lines 54-57; col. 14, lines 6-9. Thus, neither the surface of the base plate nor the surface of the sheet of material is “configured to prevent lateral movement of . . . at least one substrate,” as would be required for Sanders to anticipate each and every element of independent claim 1. Therefore, under 35 U.S.C. § 102(b), the subject matter recited in independent claim 1 is allowable over the subject matter described in Sanders.

Each of claims 2 and 35-37 is allowable, among other reasons, for depending directly or indirectly from independent claim 1, which is allowable.

Claim 35 is additionally allowable since Sanders does not expressly or inherently describe an “ejection element.” Instead, the disclosure of Sanders is limited to use of heat or a solvent to facilitate removal of the sheet of material from the heat resistant base plate. Col. 14, lines 14-46.

While these techniques do allow for the removal of an object from the base plate, they do not *eject* the object from the base plate.

The programmable material consolidation apparatus of independent claim 57 also includes an “ejection element.” Again, Sanders does not expressly or inherently describe an ejection element. Rather, Sanders merely discloses techniques that allow for the removal of an object from a base plate upon which the object is formed. As such, independent claim 57 recites subject matter that, under 35 U.S.C. § 102(b), is allowable over the subject matter described in Sanders.

Claim 58 is allowable, among other reasons, for depending directly from independent claim 57, which is allowable.

Withdrawal of the 35 U.S.C. § 102(b) rejections of claims 1, 2, 35-37, 57, and 58 is respectfully solicited, as is the allowance of each of these claims.

Rejections under 35 U.S.C. § 103(a)

Claims 3-13, 17-34, 38-45, 50, 51, 54-56, and 59-63 stand rejected under 35 U.S.C. § 103(a).

The standard for establishing and maintaining a rejection under 35 U.S.C. § 103(a) is set forth in M.P.E.P. § 706.02(j), which provides:

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

Sanders in View of Tischler

Claims 3-9 and 43 are rejected under 35 U.S.C. § 103(a) for being directed to subject matter that is purportedly unpatentable over the subject matter taught in Sanders, in view of teachings from U.S. Patent Publication 2003/00114016 to Tischler (hereinafter "Tischler").

Each of claims 3-9 and 43 is allowable, among other reasons, for depending directly or indirectly from independent claim 1, which is allowable.

Claim 43 is further allowable because Sanders and Tischler both lack does not expressly or inherently describe a retention system that includes a locking ring. While Fig. 4 of Tischler has been cited in support of the rejection of claim 43, it is not clear which element of the apparatus shown in Fig. 4 would comprise a locking ring. It is clear, however, that Tischler includes no teaching or suggestion that the side wall of the device shown in Fig. 4 is a locking ring. *Cf.* Office Action of May 1, 2006, page 5.

It is further submitted that, without the benefit of hindsight that the claims of the above-referenced application have afforded, one of ordinary skill in the art wouldn't have been motivated to combine teachings from Sanders and Tischler in the manner that has been asserted. In particular, one of ordinary skill in the art wouldn't have been motivated to import teachings

from Tischler, the devices of which are configured specifically for use in the chambers of material deposition reactors, into the stereolithography apparatus of Sanders. As those of ordinary skill in the art are aware, reactors of the type with which the wafer handling system of Tischler is configured for use are configured to provide an environment (including the generation of an electrical bias, or voltage) in which desired chemical reactions may be effected over substrates. In contrast, the stereolithography apparatus of Sanders is used to form models in a layer-by-layer fashion, with an object under fabrication being submerged into a bath of liquid material as each successive layer of a model is formed.

Also for these reasons, one of ordinary skill in the art would have no reason to expect that the wafer handling system of Tischler could be used with the stereolithography apparatus of Sanders.

As such, it is respectfully submitted that a *prima facie* case of obviousness has not been established against any of claims 3-9 or 43.

Sanders, Tischler, and Jensen

Claims 10 and 11 have been rejected under 35 U.S.C. § 103(a) for being directed to subject matter which is allegedly unpatentable over the subject matter taught in Sanders, in view of teachings from Tischler and, further, in view of teachings from U.S. Patent Publication 2001/0032111 to Jensen, Jr. et al. (hereinafter "Jensen").

Each of claims 10 and 11 is allowable, among other reasons, for depending indirectly from independent claim 1, which is allowable.

Claims 10 and 11 are also allowable since no combination of teachings from Sanders, Tischler, and Jensen could be used to establish a *prima facie* case of obviousness. In particular, without the benefit of hindsight, one of ordinary skill in the art wouldn't have been motivated to combine the teachings of Sanders, which relate to stereolithography apparatus, with teachings from Tischler, which relate to wafer carriers that are configured for use in epitaxial thin film deposition reactors, and the teachings of Jensen, which are directed to material deposition, or so-called "three-dimensional printing," processes for fabricating polishing pads. More specifically, without the benefit of hindsight that the claims and specification of the

above-referenced application afford, it is not understood how or why one of ordinary skill in the art would have been motivated to use either stereolithography or three-dimensional printing processes to fabricate an object upon a wafer carrier that is configured for use in an epitaxial thin film deposition reactor.

Therefore, it is respectfully submitted that claims 10 and 11 are both drawn to subject matter that is allowable under 35 U.S.C. § 103(a).

Sanders, Tischler, and Huang

Claims 12, 13, and 17 have been rejected under 35 U.S.C. § 103(a) for being directed to subject matter which is allegedly unpatentable over the subject matter taught in Sanders, in view of teachings from Tischler and, further, in view of teachings from U.S. Patent Publication 2003/0173713 to Huang (hereinafter “Huang”).

Each of claims 12, 13, and 17 is allowable, among other reasons, for depending directly or indirectly from independent claim 1, which is allowable.

Furthermore, it is respectfully submitted that Sanders, Tischler, and Huang do not provide teachings that support a *prima facie* case of obviousness against any of claims 12, 13, or 17.

In particular, it is respectfully submitted that, without the benefit of hindsight that has been made available to the Office by the claims and disclosure of the above-referenced application, one of ordinary skill in the art wouldn't have been motivated to immerse the wafer carrier of Tischler within the liquid-filled chamber of a stereolithography apparatus of either Sanders or Huang. Specifically, Tischler does not provide any motivation to use the support thereof anywhere other than in a reactor for depositing epitaxial thin films. Moreover, it appears from the disclosures of Sanders and Huang that their respective base plate and work surface 28 operate as intended, indicating that there would be no reason for one of ordinary skill in the art to use a carrier for use in the chamber of a material deposition reactor in place of either the base plate of Sanders or the work surface 28 of Huang.

As such, under 35 U.S.C. § 103(a), the subject matter recited in claims 12, 13, and 17 is allowable over the subject matter taught in Tischler and Huang.

Sanders, Tischler, Huang, and Penn

Claims 18 and 19 have been rejected under 35 U.S.C. 103(a) for reciting subject matter which is allegedly unpatentable over the subject matter taught in Sanders, in view of the teachings from Tischler, Huang, and, further, in view of the teachings from U.S. Patent 6,169,605 to Penn et al. (hereinafter “Penn”).

Claims 18 and 19 are both allowable, among other reasons, for depending directly from independent claim 1, which is allowable.

Moreover, Penn provides no teachings that would remedy the aforementioned deficiencies with the asserted combination of teachings from Sanders, Tischler, and Huang.

Sanders in View of Cheng

Claims 20-26, 38, 39, 59, and 60 stand rejected under 35 U.S.C. § 103(a) for being directed to subject matter which is allegedly unpatentable over the subject matter taught in Sanders, in view of teachings from U.S. Patent 5,304,248 to Cheng et al. (hereinafter “Cheng”).

Claims 20-26, 38, and 39 are each allowable, among other reasons, for depending directly or indirectly from independent claim 1, which is allowable.

Claims 59 and 60 are both allowable, among other reasons, for depending directly and indirectly, respectively, from independent claim 57, which is allowable.

Claims 38 and 59 are further allowable because Sanders and Cheng both lack any teaching or suggestion of a piston with in a recess in a support surface (*e.g.*, the surface of the susceptor 40 of Cheng).

Moreover, it is respectfully submitted that, without the benefit of hindsight that has been provided by the claims of the above-referenced application, one of ordinary skill in the art wouldn't have been motivated to combine teachings from Sanders and Cheng in the manner that has been asserted. Like the teachings of Tischler, the teachings of Cheng relate to apparatus that are useful within the chambers of reactors that generate chemical reactions that result in the indiscriminate deposition of materials upon substrates, whereas Sanders teaches an apparatus in which an object may be fabricated in accordance with a program.

Therefore, it is respectfully submitted that a *prima facie* case of obviousness has not been

established against any of claims 20-26, 38, 39, 59, or 60.

Sanders, Tischler, and Cheng

Claims 44 and 45 are rejected under 35 U.S.C. § 103(a) for being drawn to subject matter that is assertedly unpatentable over the subject matter taught in Sanders, in view of the teachings from Tischler and, further, in view of the teachings of Cheng.

Claims 44 and 45 are allowable, among other reasons, for respectively depending indirectly from independent claim 1, which is allowable.

Additionally, Tischler does not provide any motivation for one of ordinary skill in the art to combine its teachings or those of Cheng, which relate to apparatus for use with material deposition reactors, with the teachings of Sanders, which relate to stereolithography apparatus.

Sanders, Cheng, and Jensen

Claims 27-32 and 34 are rejected under 35 U.S.C. § 103(a) for reciting subject matter which is purportedly unpatentable over that taught in Sanders, in view of teachings from Cheng and, further, in view of the teachings of Jensen.

Each of claims 27-32 and 34 is allowable, among other reasons, for depending indirectly from claim 1, which is allowable.

In addition, it is respectfully submitted, that for the same reasons presented above, one of ordinary skill in the art wouldn't have been motivated to combine teachings from Sanders with teachings from Cheng. Jensen does not provide any teachings or suggestions that would remedy the aforementioned deficiencies of this asserted combination.

Claim 32 is additionally allowable since none of Sanders, Cheng, or Jensen teaches or suggests a support surface with a pressure port that is configured and oriented to facilitate a circulating air flow over the support surface.

Thus, under 35 U.S.C. § 103(a), the subject matter recited in each of claims 27-34 is allowable over the teachings of Sanders, Cheng, and Jensen.

Sanders in View of Jensen

Claims 40-42 and 61-63 stand rejected under 35 U.S.C. § 103(a) for reciting subject matter that is purportedly unpatentable over the subject matter taught in Sanders, in view of teachings from Jensen.

Each of claims 40-42 is allowable, among other reasons, for depending indirectly from independent claim 1, which is allowable.

Claims 61-63 are each allowable, among other reasons, for depending directly or indirectly from independent claim 57, which is allowable.

Claims 41 and 62 are additionally allowable since neither Sanders nor Jensen teaches or suggests a support surface with a pressure port that is configured and oriented to facilitate a *circulating* air flow over the support surface.

Sanders, Cheng, Jensen, and Tischler

Claim 33 is rejected under 35 U.S.C. 103(a) for being drawn to subject matter that is allegedly unpatentable over the subject matter taught in Sanders, in view of the teachings from Cheng, Jensen, and Tischler.

Claim 33 is allowable, among other reasons, for depending indirectly from independent claim 1, which is allowable.

Claim 33 is further allowable because Sanders, Cheng, Jensen, and Tischler each lack any teaching or suggestion of an ejection element that is configured to facilitate grasping of at least one substrate positioned over a support surface. Instead of teaching an ejection element, the teachings of Tischler are limited to use of a conventional vacuum pick-up head to remove a wafer from the carrier disclosed therein. *See* Tischler, paragraph [0060].

Sanders, Tischler, Cheng, and Huang

Claims 50, 51, and 54 stand rejected under 35 U.S.C. § 103(a) for reciting subject matter that is assertedly unpatentable over the teachings of Sanders, in view of the subject matter taught in Tischler, Cheng, and Huang.

Each of claims 50, 51, and 54 is allowable, among other reasons, for depending indirectly from independent claim 1, which is allowable.

Furthermore, Cheng provides no teaching or suggestion that remedies the above-noted deficiencies in the asserted combination of teachings from Sanders, Tischler and Huang.

Additionally, none of Sanders, Tischler, Cheng, or Huang teaches or suggests a planarization element configured to be drawn across a surface of unconsolidated material, as recited in claim 50.

With respect to the subject matter recited in claim 54, which depends from claim 50, none of Sanders, Tischler, Cheng, or Huang teaches or suggests a lip that is configured to substantially confine a volume of unconsolidated material within the interior of a periphery defined thereby. Further, there is no teaching or suggestion in any of these references that a planarization element could be translated across the surface the shield of Cheng, which is merely configured to prevent the exposure of edges and back side of a wafer from exposure to chemical reactants and their products.

Sanders, Tischler, Cheng, Huang, and Penn

Claims 55 and 56 stand rejected under 35 U.S.C. § 103(a) for reciting subject matter which is assertedly unpatentable over that taught in Sanders, in view of the teachings of Tischler, Cheng, Huang, and Penn.

Claims 55 and 56 are both allowable, among other reasons, for depending indirectly from claim 1, which is allowable.

Claims 55 and 56 are further allowable since neither Cheng nor Penn includes any teaching or suggestion that would remedy the deficiencies of the asserted combination of teachings from Sanders, Tischler, and Huang, as discussed above.

Withdrawal of the 35 U.S.C. § 103(a) rejections of claims 3-13, 17-34, 38-45, 50, 51, 54-56, and 59-63 is respectfully solicited, as is the allowance of each of these claims.

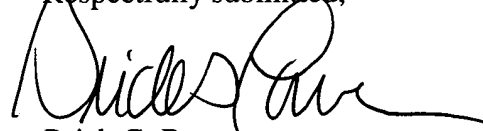
Allowable Subject Matter

The indication that claims 14-16, 46-49, 52, and 53 recite allowable subject matter is gratefully acknowledged. Nonetheless, none of these claims has been amended to independent form, as the claims from which they depend are also believed to be allowable.

CONCLUSION

It is respectfully submitted that each of claims 1-63 is allowable. An early notice of the allowability of each of these claims is respectfully solicited, as is an indication that the above-referenced application has been passed for issuance. If any issues preventing allowance of the above-referenced application remain which might be resolved by way of a telephone conference, the Office is kindly invited to contact the undersigned attorney.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Brick G. Power", with a long horizontal flourish extending to the right.

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